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AUG 11 1953

STOCKS

SCIENCE AND INDUSTRY

Present Status of FTC Suit Against Florida Citrus Mutual

As of this date (July 28) the following is the status of the Federal Trade Commission suit against Florida Citrus Mutual as reported by the Press and Publicity director of Mutual.

"Florida Citrus Mutual has been served with a formal notice by the Federal Trade Commission that attorneys representing that agency have filed an appeal to the full Commission from a decision by a hearing examiner dismissing charges that Mutual engaged in practices which were in violation of the anti-trust laws.

"As yet, there has been no indication when the Commission will hear the appeal. The FTC lawyers barely got their formal appeal under the wire within the time limit under FTC's rules of procedure.

"Mutual officials are confident that they can win this final step in their battle against charges that some of the things Mutual has done were outside the exemptions granted it as an agricultural cooperative by the Capper-Volstead Act. A favorable decision by the hearing examiner, Judge J. Earl Cox, is being counted on heavily to carry much weight with the Commission members when they weigh the issues involved.

"Should the Commission unexpectedly overrule its own examiner, however, it would mean only the loss of a motion by Mutual attorneys and the case would revert back to a full trial on its merits."

This
Month

Tristeza in Florida
Hedging of Florida Citrus Trees
Scraps From My Notebook — Part V
Citrus Insect Control For August, 1953
Florida Citrus Crops Valued at \$115,300,000
Regulation Relating to Additional Grapefruit Tax
Effect of Rootstocks on Purple Scale Infestation in Orange Trees

Vol. 34, No. 8

Bartow, Florida

August, 1953

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Citrus Insect Control For August, 1953...

W. L. THOMPSON AND R. M. PRATT*
FLORIDA CITRUS EXPERIMENT
STATION, LAKE ALFRED

Although the level of scale activity has been high, the major problem during June and July has been rust mite control. In the four-week period ending July 10, the average infestations on fruit increased from 6.5% to 27%, a four-fold increase. Infestations are still heavy in most groves which have not been sprayed or dusted recently with sulfur and many groves have been seen in which all the fruit is seriously rust-settled. The level of activity is expected to remain high through August.

Purple scale activity increased substantially during July and was at a very high level at the end of the month. Scale control has been unusually difficult this season because of dry weather in many areas, and because of the extremely high level of rust mite activity. Many organizations were forced to suspend oil spraying and spray a large number of groves with sulfur before they could complete their scale control program. It is expected that purple scale activity will continue to be high, with more than half of the scales in the younger stages through the first week in August. There will probably be a period in mid-August when the percentage of purple scale in the egg stage will be high.

Although red scale activity declined during July, there has been a substantial increase in the rate of hatching. The peak of this hatch is not expected to be reached before the first of August. An increase in red scale activity usually occurs during August, and when the present active hatch is considered, there appears to be a strong possibility of above average infestations in August and September. Groves where red scale has been present should be watched closely, especially when a scalicide has not been applied since June.

Purple mite activity was reduced sharply during June but there has been little change in July. Moderate to heavy infestations can be found in some groves. With rains becoming more general, a reduction is expected in most areas, but purple

mites may persist in areas where rainfall is deficient. This occurred last year in the Indian River District.

Mealybugs and six-spotted mites have almost disappeared.

Spray Programs

Usually in August, rust mite is the important pest to control, but this year, in addition to the mites, there are still many groves that have not had a summer spray for scale control. Close inspection for scale should be made at this time in all groves that have not been sprayed with a scalicide since the post-bloom period. Especial care should be taken to inspect the fruit of all early varieties of grapefruit, oranges, and tangerines for purple and chaff scale. Where either of these species settles on fruit, the area around them does not degreen until late in the season. The green spots on the fruit are a definite grade lowering factor and to prevent this blemish, the scale on fruit should be killed well before picking the fruit. Since there is considerable melanose on the fruit this year in groves where no copper was applied or where infection took place before the copper application, it is necessary to have the fruit as free of other blemishes as possible in order to pack a fair percentage of the fruit.

Where any amount of red scale is present, a scalicide should be applied this month because this species often increases very rapidly during August and September. A serious leaf and fruit drop can be avoided in the fall if the red scale infestations are reduced to a low level before the fall generation develops.

All scalicides should be applied before mid-August because there are likely to be more young stages present than later in the month. Parathion at 1 2/3 pounds plus 5 to 8 pounds of wettable sulfur per 100 gallons is preferred in August because it does not affect solids or retard degreening of the fruit. If it is not practical to use parathion an oil emulsion can be used, but the application should be made as soon as possible to minimize the undesirable effects of oil.

More care than usual should be taken to obtain thorough coverage at this time. The weight of the fruit is now bending the branches

and compacting the foliage which makes penetration of the spray through the trees more difficult.

Rust mite infestations are still common despite frequent showers so close inspections should be made and control measures taken before heavy infestations develop. Experimental data indicates that rust mite infestations during August and September are responsible for the high percentage of leaves effected with greasy spot as well as being a factor in causing pitting of grapefruit rind.

On tangerines and all early varieties of oranges, wettable sulfur at 8 pounds per 100 gallons is recommended. A sulfur dust can be used but it is not as effective as the spray. On mid-season and late varieties, 1/4 of one gallon of lime sulfur plus 5 to 8 gallons of wettable sulfur can be used and that combination is more effective than wettable sulfur. Thorough applications are especially necessary for satisfactory mite control during the rainy season.

Purple mite infestations are at a medium to low level and may not need attention at the present time. They can be found in most groves that have not been sprayed with oil, and where repeated applications of sulfur have been made, some control measures may be necessary. Any of the materials containing Ovotran can be used at 1 1/4 pounds per 100 gallons. Three quarts of oil emulsion per 100 gallons is effective and 12 to 16 ounces of parathion can be added to the oil if scale control is desired.

For more detailed information refer to the 1953 "Better Fruit Program" or consult the Citrus Experiment Station at Lake Alfred or Fort Pierce.

NEW MOTION PICTURE SHOWS FAIR EXHIBITS

County displays arranged by county and home demonstration agents, 4-H club exhibits, cattle and swine shows and other features of the Florida State Fair are depicted in a new color, sound motion picture "shot" at the 1953 fair. Manager J. C. Huskinson says it is available throughout the state, and suggests that those requesting a loan name two preference dates.

*Written July 24, 1953. Reports of surveys by Harold Holtsburg, Cocoa; J. W. Davis, Tavares; K. G. Townsend, Tampa; J. W. Weeks, Avon Park; and T. B. Hallam, Lake Alfred.

Effect of Rootstocks on Purple Scale Infestations In Orange Trees

HERBERT SPENCER AND
MAX R. OSBURN*

In 1942 the Bureau of Plant Industry, Soils and Agricultural Engineering, set out an experiment near Tavares, Fla., in which orange trees were budded on different kinds of rootstocks. There were 14 blocks of 24 trees of the Parson Brown variety and 13 blocks of 21 trees of the Valencia. In each block 3-tree plots on each rootstock were randomized.

The horticultural results of the first 9 years of this experiment have been reported by Cook, Horanic, and Gardner (1953). Among other findings, they noted that in this soil (Lakeland fine sand) the trees on sour orange roots were relatively stunted, trees on Cleopatra roots were intermediate in growth and vigor, and those on rough lemon roots were much larger and more vigorous. In 1946 the differences were very marked and could be attributed only to the rootstocks, since soil, fertilizer, and insecticide applications were the same for all trees. The experiment seemed to offer a good opportunity for obtaining information as to whether different rootstocks affect population levels of the purple scale (*Lepidosaphes beckii* (Newm.)), and also on the relation between lush and vigorous top growth and

purple scale abundance.

Sampling for infestation data was started in June 1946 and was concluded in December 1948. Five sets of samples were taken during this period. Leaves were clipped at chest level from each tree of the 3-tree plots. In the laboratory 20 leaves from each plot were examined under binocular microscopes, and the num-

sensitive enough to show these general trends, it presumably would have shown even small differences due to the different rootstocks if any had occurred. We must conclude that, although the rough lemon rootstock produced large, vigorous tops, the Cleopatra rootstocks intermediate vigor in the tops, and the sour orange stunted growth, there was no effect on purple scale infestations. These data give no support whatever to the theory that vigorous trees are favorable for the development of purple scale infestations. They indicate also that, if growers are forced to

TABLE 1.—PURPLE SCALE INFESTATIONS IN ORANGE TREES ON DIFFERENT ROOTSTOCKS.

Orange Variety and Rootstock	Means June 6, 1946	Numbers Aug. 8, 1946	of Living Scales Oct. 17, 1946	Per Leaf May 14, 1947	Dec. 28, 1948	Difference Required for Significance at 5%	at 1%
Parson Brown on:							
Sour orange	0.24	0.56	2.58	2.43	0.54	0.81	1.08
Cleopatra	.24	1.07	2.21	2.07	.25	.81	1.08
Rough lemon	.20	.56	3.10	1.57	.32	.60	.80
Valencia on:							
Sour orange	1.35	1.13	2.62	1.05	.47	1.12	1.50
Cleopatra	.94	.96	2.84	.69	.64	.86	1.16
Rough lemon	.47	.82	2.45	.73	.41	.43	.58

bers of living purple scales found on half of the top and under surfaces of each leaf were recorded. The data were analyzed statistically. The summary is given in table 1.

No significant differences were found between infestations on different rootstocks on any examination. There were uniform significant increases in infestation between August 8 and October 17, 1946, but these increases occurred on all rootstocks and indicated a general build-up of scales that fall. A uniform reduction in infestation was seen in December 1948, due undoubtedly to oil-emulsion spray applied to all trees earlier that year.

Since the experimental method was

turn from sour orange rootstocks to Cleopatra or rough lemon on account of the tristeza virus disease, they will not face greater difficulties in controlling purple scale.

Literature Cited

Cook, James A., Geo. E. Horanic, and F. E. Gardner. 1953. Citrus rootstock trials. *Citrus Indus.* 34(1):8-12.
Cook, James A., Geo. E. Horanic, and F. E. Gardner. 1953. Citrus rootstock trials. *Fla. State Hort. Soc. Proc.* (1952) 65: 69-77.

A complete fertilizer, such as 4-7-5, is satisfactory for fertilizing scuppernong vines. Eight to 10 pounds should be satisfactory for one application to an old fairly large vine.

*United States Department of Agriculture, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine.

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Tristeza In Florida...

Tristeza was first positively identified in Florida in the Spring of 1952 by Dr. T. J. Grant, Plant Pathologist, U.S.D.A. Subtropical Fruit Field Station, Orlando, Florida. Subsequent collections by Dr. Grant and Dr. J. F. L. Childs verified presence of this disease in Orange, Highlands and Lake counties.

In July, 1952, a meeting was held which included state and federal agencies and representatives of the citrus industry. At this meeting the U.S.D.A. Subtropical Fruit Field Station at Orlando accepted the responsibility of indexing trees suspected of having tristeza on Key limes. The Citrus Experiment Station at Lake Alfred agreed to aid in establishing a laboratory for the identification of tristeza by the Schneider or bark sampling method.

The Plant Commissioner of the State Plant Board took immediate steps to determine the extent of tristeza in Florida. Grove inspectors were given intensive training in the field recognition of tristeza symptoms at Orlando in July, 1952. Because the State of Florida did not have facilities to identify this disease, Dr. Robert M. Pratt was loaned to the Plant Board by the Citrus Experiment Station, Lake Alfred, for the purpose of establishing a laboratory capable of identifying this disease. Dr. Pratt was sent to California where he was trained in the Schneider method of bark analysis for the determination of tristeza or quick decline. Dr. Pratt returned to Florida and established a laboratory for the Plant Board in space provided

JOE N. BUSBY,
GROVE INSPECTOR
STATE PLANT BOARD

by the Citrus Experiment Station at Lake Alfred.

By the middle of August, grove inspectors of the State Plant Board who had been instructed in the technique, had commenced removing bark samples from trees showing symptoms of tristeza. These samples were prepared and forwarded to Dr. Pratt at the laboratory in Lake Alfred. By the middle of September, the Plant Board was prepared to undertake a survey to determine the extent of tristeza in Florida.

The U.S.D.A. Subtropical Fruit Station in Orlando and the Citrus Experiment Station in Lake Alfred cooperated in this survey work to the fullest extent. The Citrus Experiment Station loaned the State Plant Board the services of Dr. Pratt until November 17, 1952, at which time Dr. Mortimer Cohen was hired to do the identification of tristeza. Dr. Cohen was thoroughly trained in the Schneider technique in California and was able to take over the laboratory from Dr. Pratt with a minimum of delay. Dr. Grant has given freely of his time in this survey by testing trees from new areas that had positive bark samples. This test was made by using the Key lime as an index plant and this gave an excellent cross check on the positive bark sam-

ples. As a result, each of the citrus counties in which tristeza was found was double checked.

Grove Inspectors of the State Plant Board did not inspect each grove in the state but did check those areas in each citrus producing county where it was most likely to be found (trees on sour orange stock). As soon as tristeza was positively identified in an area, the inspectors moved to unsurveyed groves. As a result of this careful search, tristeza has been found in every citrus producing county in the State as the attached map will show. This survey also indicates that the disease is located in every citrus producing area of Florida. Under these conditions quarantine or eradication is impractical. The tristeza found in Florida is an extremely mild type of the disease and not nearly so violent as that found in South America. The survey also indicated that the disease has apparently been in Florida at least fifteen or twenty years and so there is no reason for growers to become alarmed or panicky at this time. Tristeza will ultimately kill infected trees but the spread is slow and growers can cope with the disease.

TRISTEZA INFORMATION OUTLINE

- I. Causal Agent — Virus
- II. Methods of Transmission.
 - A. Tissue union (buds and grafts)
 - B. Insect Vectors
 1. *Aphis citricidus* Kirk. (Black citrus aphid—not known to exist in the United States.)
 2. *Aphis gossypii* (cotton or mel-

on aphid—this was proved to be vector in California and is present in Florida. No other insect has been named as the vector in Florida but the problem is being studied by Dr. T. J. Grant, U.S. D.A. Pathologist and Mr. Paul Norman, U.S.D.A. Entomologist. The melon aphid is suspected because of its general distribution in Florida.)

III. Strains of tristeza virus.

- A. Virulent strain
- B. Weak strain

IV. Synonyms for tristeza

- A. Podredumbre de la raicillas (Argentina)
- B. Stem pitting disease of grapefruit (South Africa)
- C. Stunt Bush (New South Wales)
- D. Quick Decline (California)
- E. Bud Union Decline (Victoria Australia)

V. Rootstock, scion relationships.

A. Non-tolerant rootstocks.

- 1. *Citrus aurantium* L. (Sour and bitter-sweet oranges)
 - a. Algiers Seville
 - b. Axeda sem espinhos E.E.L.
 - c. Bergamia
 - d. Bigaradier
 - e. Brazilian
 - f. Bittersweet (Stow Selection)
 - g. Daidal double Calyx
 - h. Dummitt Bittersweet
 - i. Dummitt sour
 - j. Egyptian sour
 - k. Florida Bittersweet
 - l. Keen
 - m. Lanceta Amarga E.E.L.
 - n. Limao Viradouro E.E.L.
 - o. Myrtifolia
 - p. Oklawaha
 - q. Oliveland (Fawcett 382)
 - r. Palermo
 - s. Paraguay Sour
 - t. Rancho Sespe
 - u. Rehoboth Palestine
 - v. Sauvage P.I. 128348
 - w. Sour U.S.D.A. No. 2
 - x. Spain Sour
 - y. Tunis Sour

2. *Citrus paradisi* Macfad. (Grapefruit)

- a. Blackman
- b. Duncan
- c. Foster
- d. Leonardy
- e. Hall Silver (Selfed nucellar)
- f. Marsh
- g. Poorman's Orange
- h. Red Blush (Webb)
- i. Red Mexican
- j. Royal
- k. Ruby Red (Henninger Strain)
- l. Thompson

3. *Citrus Paradisi* (x) *Citrus reticulata* (Tangelos)

- a. Pina
- b. Tangelo P.I. 52018-W-2-F
- c. Tangelo 18-D-14

- d. Tangelo 18-E-7
- e. Tangelo 18-U-13
- f. Tangelo 18-T-2
- g. Tangelo 16-1-4
- h. Thornton
- i. Watt
- j. Wekiwa

4. *Citrus grandis* (L.) Osbeck (Pummelos and Shaddocks)

- a. Alamoen
- b. Asia Pummelo C.E.S. 2607
- c. Calabria
- d. Duban Shaddock
- e. Flemmings Shaddock C.E.S. 578
- f. Hawaiian Shaddock C.E.S. 454
- g. India Red Pummelo
- h. Nakorn Pummelo
- i. Natsu Mikan
- j. Lemon Shaddock C.E.S. 579
- k. Ogami Pummelo
- l. Pink Pummelo C.E.S. 2581
- m. Pink Shaddock C.E.S. 577
- n. Siam Pummelo C.E.S. 1220
- o. Siamese Pummelo
- p. Tau You Pummelo C.E.S. 2583
- q. Thong Dee Pummelo
- r. Toranja China E.E.L.
- s. Toranja Kau Panne E.E.L.
- t. Toranja Periforme E.E.L.
- u. Zamboa E.E.L.

5. *Citrus limon* (L.) Burm. f (Lemons)

- a. Amber E.E.L.
- b. Armstrong E.E.L.
- c. Deodoro E.E.L.
- d. Des 4 Saison
- e. Eureka
- f. Genoa
- g. Harris
- h. Kennedy
- i. Lemon P.I. 10785
- j. Lemon P.I. 126539
- k. Lemon P.I. 136469
- l. Lisbon E.E.L.
- m. Lisbon (Tetraploide) E.E.L.
- n. Meyer
- o. Morocco
- p. Ponderosa
- q. Selvagem E.E.L.
- r. Siciliano E.E.L.
- s. Vicosa E.E.L.
- t. Villafranca E.E.L.

6. *Citrus aurantifolia* (Christm.) Swing. (Limes)

- a. Beledy lime
- b. Kadu Mul (Pink Lime)
- c. Kalpi
- d. Key or West Indian Lime
- e. Kirk lime
- f. Persian or Tahiti Lime. (Observed as showing vein clearing symptoms similar to those caused by tristeza virus infected Key limes. First collected by Dr. J. F. L. Childs, Plant Pathologist, U.S.D.A. Subtropical Fruit Field Station, Orlando. Idemore strain collected by Plant Board Inspectors showing vein-clearing symptoms confirmed by trans-

mission test to Key lime seedlings.

7. *Poncirus trifoliata* (X) *Citrus limon* (Citremon)

- a. Citremon P.I. 46216
- 8. *Fortunella* Hybrid
- a. Nippon Kumquat
- b. Lakeland Limequat showing vein clearing symptoms. Confirmed by transmission tests to Key Lime seedlings. (Collected by Plant Board Inspectors.)

9. *Citrus macroptera*

10. *Severinia buxifolia* and *Severinia* sp.

TOLERANT STOCKS

1. *Citrus sinensis* (L.) Osbeck (Sweet oranges)

- a. Chamoudi
- b. Enterprise
- c. Florida Sweet Seedling
- d. Homosassa
- e. Jaffa
- f. Lamb Summer
- g. Lue Gim Gong
- h. Mediterranean Sweet
- i. Pineapple
- j. Ruby Blood
- k. Valencia
- 1. Washington Navel
- 2. *Citrus reticulata* Blanco (Mandarins and Hybrids)

- a. Chao Chou Tien Chieh
- b. Clementine
- c. Dancy Tangerine
- d. Kara
- e. King (of Siam)
- f. Kinnow
- g. Limao Periforme (var. Rangpur) (E.E.L.)
- h. Ling Ming
- i. Mandarin (PI) 10630
- j. Mandarin (PI) 117477
- k. Mandarin (PI) 114412
- l. Murcott Honey Orange
- m. Nobilis (PI) 10642
- n. Oneco Tangerine
- o. Ponkan (PI) 18027
- p. Rangpur Lime
- q. Satsumelo C 10-V-3
- r. Suen Kat
- s. Sunkl
- t. Swatow (PI) 10032
- u. Swatow (PI) 10031
- v. Swatow (PI) 14054
- w. Tangor C-653
- x. Temple

3. *C. paradisi* (x) *C. reticulata* (Tangelos)

- a. Minneola
- b. Orlando
- c. Sampson
- d. San Jacinto
- e. Seminole
- f. Sunshine
- g. Suwannee
- h. Tangelo 18-H-6
- i. Tangelo 18-I-13
- j. Tangelo 16-A-1
- k. Tangelo 18-I-8

1. Tangelo 16-N-7
- m. Umatilla
- n. Webber
- o. Williams
- p. Yalaha
4. *Poncirus trifoliata* (L.) Raf
(Trifoliolate Orange (Large flowered))
5. *Poncirus trifoliata* (x) C. sine
alis (Citranges)
 - a. Cunningham
 - b. Morton
 - c. Rusk
 - d. Saunders
 - e. Savage
 - f. Troyer
6. *Poncirus trifoliata* (x) C. para
dial (Citrumelos)
 - a. Citrumelo (PI) 4477
 - b. Citrumelo (PI) 4482
 - c. Citrumelo (PI) 4604
 - d. Citrumelo (PI) 4200
 - e. Citrumelo (PI) 4475
 - f. Winter Haven
7. *Citrus limon* (L.) Burm. f.
(Lemons)
 - a. Columbia Sweet Lemon
 - b. Florida Rough Lemon
 - c. Sweet Lemon (PI) 1158

The stocks listed as non-tolerant have proven unsatisfactory when tested under tristeza conditions.

The stocks listed as tolerant were satisfactory as tested.

The above tests were made under Brazil, Argentine and California conditions.

There are conflicting reports on various rootstocks. This is particularly true in so far as hybrids and little known varieties are concerned. For this reason, growers should use rootstocks that are well tested under Florida conditions. At the present time, the rootstocks that can be recommended are Florida Rough Lemon, Cleopatra Mandarin, and the above listed sweet seedlings.

The following outline of tristeza symptoms can be useful in picking out trees suspected of having tristeza. However, caution should be used since any disease that causes extensive root damage or girdling may produce similar symptoms. Plant Board inspectors use the process of elimination to determine which bark samples should be submitted for positive identification. First they determine if the declining tree is on a susceptible rootstock. Next the tree is examined for other disease that may be responsible for the decline such as foot rot or psorosis. If the tree is on a susceptible rootstock and symptoms for

other disease are not observed, the inspector takes a bark sample and submits it to the laboratory for identification. Any grower that has trees in a state of decline that are suspected of having tristeza should contact Ed L. Ayers, Plant Commissioner, State Plant Board, Seagle Building, Gainesville, Florida, or his county agent. Grove inspectors of the State Plant Board will inspect the grove as soon as practicable.

VI. Symptoms of tristeza

A. Early symptoms. (These symptoms may appear on a part of the tree or over the entire tree.)

1. Older leaves dull or slightly bronzed.
2. Suppression of new growth.
3. Pattern of minor element deficiencies in foliage.
4. Heavy blossoming and fruit setting.

B. Later symptoms.

1. Yellowing of the leaves. (Often more intense in the mid-rib and lateral veins.)
2. Older leaves begin to fall. (Abscission frequently occurring between the petiole and leaf blade.)
3. Weak shoots develop from lateral buds.
4. Young twigs and shoots die back.
5. Roots show a marked depletion of starch.
6. Some kinds of citrus such as lime and grapefruit tend to show stem pitting. These pits are longitudinal striations and should not be confused with the cone shaped pits and pegs found with xyloporosis.

C. Advanced Symptoms.

1. Sudden collapse and death of the tree as if by girdling.
2. Some trees linger on indefinitely producing sparse foliage and light crops of small, inferior fruit.
3. Some trees stunted to about 1/3 size of surrounding trees.

D. Additional Symptoms observed in Florida.

1. Stunting. (Many trees appear healthy but are much smaller than adjacent trees of the same age.) A similar symptom has been described in New South Wales.
2. Early ripening (affected trees ripen fruit earlier than adjacent healthy trees of the same variety).
3. Bark samples from infected trees on susceptible rootstocks reveal a "pin holing" or sieve-like appearance in the cambial surface of the bark just below the bud union.

4. Limes. (Key, Persian or Tahiti including the Idemore strain, and Lakeland limequats) show vein clearing on the leaves when infected with tristeza. This symptom may appear as single or numerous translucent, elongated fleckings along the lateral veins when the leaf is held up to light.

The above factual information on tristeza was taken from published and unpublished data compiled by the following research men:

C. W. Bennett, W. P. Bitters, A. F. Camp, J. F. L. Childs, A. S. Costa, E. P. DuCharme, T. J. Grant, L. C. Knorr, S. Moreira, E. R. Parker, H. Schneider, J. M. Wallace.

Nurserymen Favor Strict Inspection Of All Nursery Stock

The Florida Nursery and Growers Association has gone on record as favoring the "impartial enforcement of the rules and regulations of the State Plant Board" concerning nursery stock. This action was taken at the Association's first annual convention held recently.

Specifically, the resolution calls for inspection of nursery stock before movement from the property where it was grown, use of inspection certificates with each movement of to the State Plant Board of all citrus tree movements.

Action was taken, according to the resolution, because there is no quicker way of spreading injurious insects and diseases than by nursery stock, and because the work of the Plant Board benefits nurserymen and buyers alike in checking these pests.

PARVIN IS NAMED TO TEACH FLORICULTURE

Philip E. Parvin, a 1950 graduate of the University of Florida was recently appointed as assistant professor of floriculture in the College of Agriculture. He has already begun work, replacing J. H. Brooks, resigned.

Prof. Parvin will teach several courses in floriculture, among them flower shop management and commercial floriculture. He is a native of Bradenton.

After graduating here, Prof. Parvin accepted a graduate assistantship at Mississippi State College, where he received his master's degree. Afterwards he managed the horticulture greenhouse and commercial flower shop there.

P.I.—U.S.D.A. Plant Introduction Number
C.—U.S.D.A. Crop Physiology and Breeding Number
C.E.S.—California Citrus Experiment Station Number
E.F.L.—Citrus Experiment Station, Limeira, State of Sao Paulo, Brazil

Hedging Of Florida Citrus Trees

Hedging of citrus is a form of pruning designed to facilitate grove management practices and improve the quality of the fruit produced. It is a practice that is becoming increasingly popular among Florida citrus growers as a way to alleviate the problem of over-crowding in many bearing groves. Over-crowding is the result of close spacing at planting time. Some growers unwittingly plant too close but the majority of them purposely space their trees close together to take advantage of increased fruit production per acre while the trees are young. They plan to remove certain of the trees as they become crowded by growth but find it difficult, when the time comes, to remove healthy, bearing trees.

Hedging provides a means by which the bearing surface of trees is reduced in area without greatly reducing their bearing ability after the first year. Indeed, in the case of some varieties, especially tangerines, hedging actually increases the percent of pack-out of fresh fruit in the first crop following the pruning operation by increasing sizes (see Table 1). Fruit color and texture also are often improved because of increased sunlight and more effective insect and disease control.

Another important reason for hedging is to open the tree middles to encourage the growth of cover crops which are important in conserving fertilizer materials applied and supplying food for soil micro-organisms.

One of the most valuable advantages of hedging, and the primary reason for its use in the first place, is to open the tree middles by removing interlocking branches. This allows for the movement of tractors, discs, spray and dust equipment and trucks through the grove without damage to the trees and fruit or to the equipment and operator. It speeds up grove operations generally, thereby reducing cultural costs.

About the only disadvantages to hedging a grove are the initial cost of the operation, some reduction in total crop for the first year or two and a problem with respect to mov-

R. E. NORRIS
LAKE COUNTY AGRICULTURAL
AGENT

ing out the brush. Brush removal may add considerably to the expense of hedging but where there are considerable quantities of heavy brush it is generally recommended that the brush be removed from the grove. Brush piled too close to the trees and left there to rot may result in trees becoming infected with termites and disease.

Experience has shown that hedging trees to a 7-foot or 8-foot opening in the middles is about optimum. It allows machinery to pass and does not excessively reduce the bearing surface of the trees. The most common practice is to prune trees every row in one direction and in the opposite direction two years later. That means that after the initial hedging cuts are made the rows will be pruned lightly in the alternate direction every two years. Any given

row will be trimmed every four years. This plan is frequently modified. Some operators hedge tangerines and other varieties in both directions at one time initially and thereafter adopt a four-year rotation plan. Other modifications are satisfactory.

Hedging should be done during the winter months and the job should be completed before the spring growth starts. In some cases this will mean hedging while the old crop is still on the trees. But many growers feel it is more desirable to take a salvage price for the fruit thus removed if necessary than to delay pruning beyond the time of the spring flush. In the case of Valencias, however, it is felt that hedging should be delayed until immediately after the mature crop is harvested.

There are several methods of hedging. The first method used and still widely practiced is the use of hand labor with sharp pruning saws and clippers. Before the cutting operation is started many operators line stakes down the middles 3½ or 4 feet on each side of the center line

(Continued on page 11)

TABLE 1.—PERCENT OF PACK-OUT BEFORE AND AFTER HEDGING.

(While these figures are not meant to imply that hedging will always result in an increase in the percent of pack-out, they illustrate a trend in several varieties based on a very limited study.)

Season	Picked (boxes)	Packed (boxes)	% Pack-out
Grove A			
Tangerine block—25 years old—set 26 X 26—900 trees			
1949-50	6,087	2,207	36.25
Hedged on two sides Feb. '50	3,564	3,005	84.31
1950-51	7,908	6,588	83.31
1951-52	3,970	3,570	89.92
Grove T			
Tangerine block—20 years old—set 20 X 20—500 trees			
1949-50	2,536	768	30.28
1950-51	215	96	44.66
Hedged two sides Feb. '51	2,295	1,972	85.93
1951-52	1,696	1,380	81.37
Grove C			
Tangerine block—25 years old—set 20 X 20—1,500 trees			
1949-50	7,459	3,387	45.41
1950-51	4,980	2,408	48.35
Hedged alternate sides Feb. '51	3,708	2,100	56.64
1951-52	5,238	3,840	73.38
Grove D			
Marsh Seedless Grapefruit—set 25 X 25—20 years old—390 trees			
1949-50	2,860	2,853	82.27
1950-51	2,370	1,336	56.37
Hedged two sides Feb. '51	2,983	2,082	70.08
1951-52	2,761	2,053	66.09
Grove E			
Hamlin Grove—Set 20 X 20 (diamond)—16 years old—348 trees			
1949-50	2,307	all cannery	0%
1950-51	2,125	1,197	56.33
1951-52	2,663	1,800	67.59
Hedged two sides Feb. '52	711 spot picked on hedged side	657	92.40
1952-53	1,807	(picked later) all cannery	0%
	2,518	657	26.09

TABLE 2.—SAMPLE COSTS OF HEDGING IN THE FLORIDA RIDGE AREA.

Variety	Age	Spacing	Method	Cost per Tree	Is Brush Removal Included?
Grapefruit	25	25 X 25	Machine	0.07½*	No
Temple	18	12½ X 25	Hand	0.51	Yes
Grapefruit	40	25 X 25	Hand	0.68	No
Tangerines	22	25 X 25	Hand	0.25	No
Hamlin	16	20 X 20	Hand	0.36	Yes**
Grapefruit	20	25 X 25	Hand	0.78	Yes**
Tangerines	25	20 X 20	Hand	0.42	Yes**
Grapefruit	28	25 X 25	Pneumatic	0.26	No

* Cost of machine not included.

** Includes painting pruning cuts over 1" diameter.

Experiments In 1952 For Control Of Citrus Red Mite

PAUL A. NORMAN AND
HERBERT SPENCER¹

In 1952 experiments for control of the citrus red mite (*Paratetranychus citri* (McG.)) were continued in a grove of Temple orange trees at Fort Pierce, Fla. The trees were arranged in 10 blocks with 9 treatments randomized in single-tree plots in each block. The trees had been used in 1949 and 1950 (Spencer and Norman, 1951) and in 1951 (Norman and Spencer, 1952) for earlier experiments.

On February 9, 1952, all trees were sprayed by the owner² with a mixture containing 2/3 pound of 40-percent dinitro-o-cyclohexylphenol (DN Dry Mix No. 1), 3 pounds each of zinc carbonate and manganese oxide, 10 pounds of wettable sulfur, and 16 pounds of urea (Nugreen) per 100 gallons. The dinitro-o-cyclohexylphenol was for the control of the citrus red mite. At postbloom spray time, March 31, a mixture containing 2 pounds of basic copper sulfate, 1 pound of 15 percent wettable parathion, and 10 pounds of wettable sulfur per 100 gallons was applied by the owner to all the trees.

On May 28 a prespray estimate of infestations was made. One unhatched egg or crawling stage was enough to classify a leaf as being infested. On this basis citrus red mite infestations of 20 percent or less require no control. Infestations on leaves and fruits ranged from 76 to 88 percent, but the differences between treatments were not significant, an indication that the 1951 treatments had no influence on the present infestation, and that the dinitro compound applied in February controlled the red mites only until mid-May. The parathion used in the March postbloom spray, together with the basic copper sulfate, may have had a great deal to do with the reappearance of the red mites in heavy infestation during May. Apparently, winter applications of the dinitro compound cannot be depended upon to control red mites through the year on trees that receive copper, zinc, manganese, and/or parathion in winter or in post-bloom applications. A summer miticide should

be added to the sulfur rust mite spray in June or July for year-around control.

Included in the 1952 experiments were EPN, p-chlorophenyl p-chlorobenzenesulfonate (Ovotran), bis (p-chlorophenoxy)-methane (Neotran), Aramite, and malathion. Also included was an emulsive oil prepared by adding 38 ml. of Triton R-1956 (a glycerol phthalic alkyd resin) emulsifier per gallon to a standard spray oil having a viscosity of 114 seconds Saybolt at 100° F. and an unsulfonatable residue (A.O.A.C.) of 73.5 percent.

In most of the tests these miticides were used in combination with wettable sulfur and/or parathion. In one treatment only the last two materials were used. Wettable sulfur was included for control of the citrus rust mite. (*Phyllocoptruta oleivora*

was very much better and differences between materials were not so marked. Although the natural infestations were probably on the decline, infestations were still heavy on adjacent untreated trees early in July.

All the experimental sprays gave excellent reduction of heavy initial infestations, although the spray containing parathion without any of the newer miticides gave significantly less reduction than the other combinations.

The 1952 results indicate that, for summer control of the citrus red mite, one of the following miticides might be added to the rust mite and scale spray of wettable sulfur and parathion: p-chlorophenyl p-chlorobenzenesulfonate, bis (p-chlorophenoxy)-methane, or EPN. The spray containing Aramite was slightly inferior to the others. Malathion added to wettable sulfur gave promising results. Emulsive oil, either alone or with parathion, also gave good reduction of heavy red mite infestations.

Literature Cited

Norman, Paul A., and Herbert Spencer. 1952. Experiments in 1951

TABLE 1.—CONTROL OF CITRUS RED MITES ON TEMPLE ORANGE TREES WITH COMBINATION SPRAYS CONTAINING VARIOUS MITICIDES. 1952.

Materials (quantities per 100 gallons)	Percent of leaves infested	
	Prespray	Postspray
Emulsive oil 1 gal.	76	1.3
Emulsive oil 1/2 gal., parathion (15% WP) 1 lb.	85	1.0
EPN (27% WP) 1 lb., parathion (15% WP) 1 lb., wettable sulfur 5 lb.	87	.3
p-Chlorophenyl p-chlorobenzenesulfonate (50% WP) 1 lb., parathion (15% WP) 1 lb., wettable sulfur 5 lb.	87	.6
bis (p-Chlorophenoxy) methane (40% WP) 1 1/2 lb., parathion (15% WP) 1 lb., wettable sulfur 5 lb.	87	2.6
Aramite (57% Em) 1/2 pt., parathion (15% WP) 1 lb., wettable sulfur 5 lb.	85	4.0
Malathion (25% WP) 2 1/2 lb., wettable sulfur 5 lb.	87	1.6
Malathion (50% Em) 1 qt., wettable sulfur 5 lb.	82	2.6
Parathion 1 lb., wettable sulfur 5 lb.	88	5.0
Differences required for significance:		
at 5% level	nsd	3.3
at 1% level	nsd	4.3

(Ashm.) and parathion for the purple scale (*Lepidosaphes beckii* (Newm.)). The sprays were applied on June 4 and postspray estimates of infestation by the citrus red mite were taken on July 11. The materials used and the results are shown in table 1.

In contrast to 1951, when 9.88 inches of rain followed the first experimental sprayings, the rainfall of 1.56 inches during June and 2.36 inches during the first 11 days of July of 1952 was lower than average and the miticide residues remained on the trees longer. For this reason control with the wettable miticides

on control of the citrus red mite. Fla. Ent. 35(1): 19-21.

Spencer, Herbert, and Paul A. Norman. 1951. Experiments on control of the citrus red mite (purple mite). Second report. Fla. Ent. 34(1): 3-5.

For control of leaf spot and leafhoppers, begin dusting peanuts 60 to 75 days after planting (earlier, if necessary) with 325-mesh sulphur or copper-sulphur (10-90). Dust at 10- to 14-day intervals until four applications have been made. Use 15 pounds of dust per acre per application.

1. United States Department of Agriculture, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine.

2. Norman G. Platts, cooperater. (Reprinted from The Florida Entomologist Vol. XXXVI, No. 2, June, 1953)



Scraps From My Notebook...

...By...

Gray Singleton

Food Technologist, J. William Horsey Corporation

MARMALADE—WITH VARIATIONS

Webster says that marmalade is a "Thick, pulpy jam". Sometimes Webster is right. On other occasions Webster would be surprised at what is sold in our stores under the name of marmalade. Webster never heard of the concoction described in this paper.

Usually, the marmalade of commerce is either a spread type or a jelled product. Citrus marmalades are usually jelled. We often see a "thick, pulpy jam" made from guavas that have first been used in making jelly stock. This is an excellent spread but, since the CITRUS INDUSTRY is a citrus publication, perhaps we should get back to citrus marmalade.

Of the citrus marmalades, orange is the best known but not necessarily the best to eat. All varieties of citrus fruit that I have tried make excellent marmalades but, to my taste, no one fruit variety has as good flavor as a combination of two or more varieties. A mixture of orange and grapefruit is especially good. One-third grapefruit and two-thirds orange gives much the same flavor as the sour orange marmalade that is so popular, both in this country and in Europe. If you like a little more bitter tang you might try half orange and half grapefruit. Calamondin adds acid and flavor to other citrus marmalades.

It is customary to use the juice, pulp and peel of citrus fruits in making marmalade. A mixture of about half fruit and half sugar is used and the mixture is boiled until enough water is evaporated to raise the soluble solids content to about 68%, where it will jell if the pectin, acid, mineral and sugar contents are right.

By the time the marmalade is boiled to the required solids content the sugar is caramelized and most of the fruit flavor has been lost by evaporation. Marmalade made in this way has a rather dark color and the flavor is more that of caramelized sugar than of the fruit. However, marmalade made in this way can be called "Pure marmalade"

on the label. If it is made in any other fashion it must be labeled "Imitation marmalade" if it is to be shipped in interstate commerce. It is a curious fact that some of the "imitation" marmalades have much better flavor than the "pure" marmalades.

Some commercial processors use vacuum pans and can evaporate the required amount of water without raising the temperature high enough to caramelize the sugar. This makes a light colored marmalade which can still be labeled "pure" but a large part of the fruit flavor has been lost in boiling.

The best "marmalade" that I have been able to make contains no juice or pulp of the fruit. It has only peel. Most citrus juices take on an off flavor or odor after processing and then storage at room temperature. This is not as noticeable in marmalade as in canned juice but it does detract from the flavor. Both orange and tangerine juices deteriorate rather quickly. If the foam is skimmed while boiling, orange and tangerine marmalades hold their flavor well but the best flavor and shelf life are secured by leaving out both juice and pulp. They contribute little or nothing to the marmalade since practically all the flavor is in the peel.

In making citrus marmalades it is customary to cut the peel into thin slices. This is a slow and costly process. Most of the peel cutters are of English make and are very slow. The flavor is just as good and the marmalade spreads much better if the peel is ground in a motor driven sausage mill. This gets rapid production at low cost.

Peel must always be cooked in water until it is tender before sugar is added. This may be done in a pressure cooker, retort or steam jacketed kettle. Care must be taken to see that the peel is not overcooked, especially in a pressure cooker or retort. Overcooking gives

the peel a very bad flavor.

In an agitated, steam jacketed kettle it usually takes about 35 to 40 minutes to get the peel tender after boiling starts. With a pressure cooker or retort about six to seven minutes are required at 15 pounds steam pressure. One extra minute may ruin the flavor. If the peel touches the sides of the retort it will have a burned flavor.

If peel is to be cooked in a pressure cooker or retort it should be cooked before it is ground. If it is to be cooked in an open kettle it should be ground before it is cooked.

When cooking in a steam jacketed kettle the batch should be about half peel and half water. Be sure to have enough water so that the agitator will keep the batch flowing freely. If there is a dead spot in the kettle it will quickly scorch and a very bad flavor will result.

Peel should be cooked until it is tender when pressed lightly between thumb and finger. If it is the least bit tough when the sugar is added it will never cook tender, even in a pressure cooker.

When the peel has been ground to about one-eighth inch size and then cooked until tender it is ready to make the marmalade. If a strongly flavored product is desired the peel should be left in the water in which it was cooked. If a mild flavor is wanted the cooking water should be drained off and fresh water added. The mixture should be about half water and half peel.

If a jelled marmalade is desired it can be made by using the same methods as with jelly. The formula may be about as follows:

Sugar — 68 pounds
Peel and water mixture — 31 pounds
Anhydrous monocalcium phosphate — 1 ounce
100 grade pectin — ½ pound
Adjust pH to between 3 and 3.2 with citric acid.

Peel varies considerably in pectin and mineral content. It may be necessary to vary the above figures to meet variations in the peel. The formula given allows for the average peel. Usually, about five ounces of citric acid gives the desired pH. More is required late in the season.

To be sure of a good jell, test all batches with a pH meter.

If the formula is right for the type of peel used the marmalade will jell as soon as it is brought to a boil and can be poured up immediately without boiling off the flavor or caramelizing the sugar.

If a spread is desired which is like jam and is not jelled, omit the pectin and phosphate but include the acid. It helps the flavor.

A convenient way to make this type of marmalade is to get the peel from a plant where citrus salad is being prepared. Here one can get both orange and grapefruit peel and both are partly cooked in the scalding process. Pick out the bright peel. Peel with melanose or rust mite discoloration does not look appetizing in marmalade. California has an advantage in making marmalade in that their peel is usually thick and bright. Florida peel looks much better ground than sliced. The discolored peel does not show up so plainly.

The product described in this paper has an excellent flavor and good shelf life but it is not a true marmalade. In order to avoid confusion and possible charge of misbranding it should be designated by some other name. It would be very unwise to ship it in interstate commerce under the name of marmalade.

HEDGING OF FLORIDA CITRUS TREES

(Continued from page 8)

at 20- to 30-foot intervals. These stakes are usually about 5 to 6 feet high and the pruners cut to these stakes by standing on the ground. When this is done pruners stand on trucks and complete the job, lining up their cuts with those made by the crew on the ground.

A number of operators use pneumatic tools for hedging. They follow the same general procedure as outlined above. When crews are trained and their work well planned the pneumatic tools reduce the cost of cutting very appreciably.

A third method of hedging is by the use of a mechanical device developed by Prosser at the Citrus Experiment Station. This machine will hedge about an acre an hour in average grapefruit blocks. This method provides the speediest operation and the lowest cost of doing the job, although the initial cost of the machine is around \$1,500.00. Plans for building the machine may be secured by writing the Citrus Experiment Station at Lake Alfred.*

The hedging machine is especially

well adapted to use by larger operators, cooperatives and others with large acreages that need hedging. Small operators could probably operate with less investment by renting a hedging machine for the initial pruning job and thereafter maintain their groves in a good hedged condition by the use of hand or pneumatic equipment.

Regardless of the system of hedging used, the job should be done in a workman-like manner and cuts made in accordance with good pruning practices. Wounds of $\frac{3}{4}$ inch in diameter and larger should be treated with a thick water emulsifiable asphalt paint. This will keep water out of the wounds and thereby hasten healing and reduce the incidence of disease infection in the pruning cuts.

The author wishes to acknowledge the helpful assistance of the following in furnishing suggestions for this report: Fred P. Lawrence, Citriculturist, Florida Agricultural Extension Service; Zach Savage, Assoc. Economist, Florida Agricultural Experiment Station; C. C. Thullbery, Production Manager, Lake Region Packing Assn.; H. A. Thullbery, Asst. Manager, Superior Fertilizer Co.; Morty Howell, Production Manager, Waverly Growers Coop.; and D. S. Prosser, Jr., Asst. Horticulturist, Citrus Experiment Station.

* For complete information on Mr. Prosser's hedging machine, see Experiment Station Bulletin 519.

FLORIDA CANNED GRAPEFRUIT APPEARS ON TELEVISION

Florida canned and concentrated grapefruit juices and canned grapefruit sections are being advertised on television in 50 markets east of the Mississippi River, the Florida Citrus Commission has announced.

The state agency said Miss Neva Jane Langley, of Lakeland, the 1953 Miss America, will be seen in a 20-second spot announcement on the National Broadcasting Company's network TV show, "Today," starring Dave Garroway. Garroway will follow Miss Langley's film strip boosting grapefruit with 40 seconds of live announcements, giving Florida a full minute of commercials.

The program, which will be viewed in Florida over TV outlets in Jacksonville and Miami, will feature the Florida citrus announcement at 7:30 o'clock on Thursday, at 7:48 on Tuesday, July 21, and at 8:06 on Thursday, July 23, and Tuesday, July 28. The commercials will continue twice a week for 26 weeks, under the commission's current contract with the

Garroway show.

In making the announcement today, Paul S. Paterson, commission advertising manager, said the new television commercials are the first portion of the 1953-54 Florida citrus advertising program, which was approved by the commission at its June meeting. Previously, the Miss America film strips had been shown in a few markets, but only as spot announcements and not tied in with any scheduled program.

Patterson added that the commission is also using the Miss America commercials on grapefruit in six Rocky Mountain and Pacific Coast markets, which include Los Angeles, San Francisco, Denver, Salt Lake City, Seattle, and Tacoma. The 20-second announcements will run by themselves seven times a week for 13 weeks in a test to determine the effectiveness of the commercials used alone.

The Florida Canners association, Paterson said, has been asked to cooperate with the commission in the test by furnishing comparative figures on the movement of single strength grapefruit juice, frozen concentrated grapefruit juice, and canned grapefruit sections in those markets.



You're sure of getting the right size hat when you ask for it by number. And you're sure of getting the party you want when you call Long Distance by number.

When you give your operator the out-of-town number, she puts your call straight through. Try it for faster service.

PENINSULAR TELEPHONE COMPANY
SERVICE SINCE 1901

Regulation Relating To Additional Grapefruit Tax

Sec. 1. This regulation may be cited as **ADDITIONAL GRAPEFRUIT TAX REGULATION** and is promulgated to implement and effectuate Chapter 28130, Laws of Florida, 1953, to become effective August 1, 1953.

Sec. 2. For the purpose of this regulation terms herein used unless otherwise specified shall have the following meaning:

(a) Handler means any person, firm, partnership, corporation or association engaged in the State of Florida as a packer, shipper or distributor of fresh Florida grapefruit in the primary channel of trade but shall not include such persons engaged as canners or processors.

(b) Brand advertising shall be the advertising by any handler of fresh Florida grapefruit under a brand which such handler has registered previously thereto with the Florida Citrus Commission or under a brand previously registered with the Florida Citrus Commission which he is legally entitled to use in the handling of fresh Florida grapefruit and such brand advertising shall be restricted to the use of point of sale material, price cards or other printed matter used in the display of fresh Florida grapefruit and to newspaper, billboard, magazine, radio or television advertising.

Sec. 3. The two calendar years established by Chapter 28130 be and the same are hereby designated as that calendar period beginning August 1, 1953, and ending July 31, 1954, which shall hereafter be referred to as the first calendar year and that calendar period beginning August 1, 1954, and ending July 31, 1955, shall hereafter be referred to as the second calendar year.

Sec. 4. There is hereby created out of the proceeds of the additional two cents grapefruit advertising tax a reserve fund in the sum of \$100,000 collected during the first calendar year and a further sum of \$100,000 out of the proceeds of such tax collected for the second calendar year to be rebated and disposed of as hereinafter provided.

Sec. 5. Any handler desiring to participate in brand advertising and in rebates for such advertising shall on or before September 1 of each calendar year furnish the Florida Citrus Commission with a statement showing his proposed advertising schedule with the brand or brands

he intends advertising, the media he proposes to use and the general marketing area in which the various brands will be advertised and the media to be used. This Section is not mandatory but will be helpful to the Commission in planning future advertising campaigns.

Sec. 6. On or before August 31, 1954, any handler claiming any refund shall file a claim with the Florida Citrus Commission showing the total monies expended by the claimant during the first calendar year and a like claim for the second calendar year by August 31, 1955, and such a claim must be supported by certified copies of invoices and accompanied by samples of point of sale material, price cards, or other printed matter used in the display of fresh grapefruit, tear sheets from newspapers or magazines, photographs of billboards and copies of radio or television script. Each such claim shall be supported by affidavit of the claimant or officer thereof.

Sec. 7. In the event that the sum of \$100,000 is not realized from the

proceeds of such tax in either of the calendar years or the claims filed shall exceed the amount of \$100,000 in either calendar year then each qualified claimant may receive only such proportion of such funds as the total qualified claims bear to the amount of such fund. In no event shall more than \$100,000 be refunded for either calendar year and in no event shall any claimant receive more than \$1.00 for each \$2.00 of approved claims for brand advertising of fresh grapefruit and such rebate shall be payable on or before September 15 following the calendar year for which it becomes due.

Sec. 8. On September 15 of each respective year any unclaimed amount of the reserve fund created for the preceding calendar year shall revert to and be credited to the general advertising grapefruit fund.

Sec. 9. It is hereby declared the intention of the Commission that if any portion of Chapter 28130 or of this regulation for any reason be held invalid then the remaining valid parts thereof shall remain in full effect.

There is no greater influence on human behavior in our society than the environment of our homes.—
C. M. Ferguson.

EMJEO

(80/82% MAGNESIUM SULPHATE)

Many years a favorite source of soluble magnesia for Florida soils. Used extensively in fertilizer mixtures for citrus crops and vegetables. Especially useful and economical for direct application where only magnesia is required.

Florida growers know the reasons why magnesium is needed so ask your fertilizer manufacturer for EMJEO, long a dependable source of this key plant food.

POTNIT

(95% Nitrate of Potash)

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13% Nitrate Nitrogen and 44% K₂O
for Special Mixtures and Soluble Fertilizers

BERKSHIRE CHEMICALS, INC.

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SALES AGENTS FOR F. W. BERK & COMPANY, INC.

Magnesium

For a Full Harvest

Proposed Grade Standards For Concentrated Orange Juice

The U.S. Department of Agriculture has announced proposals for two separate grade standards for concentrated Orange Juice, and (2) Grades cover (1) Grades for Canned Concentrated Orange Juice, and (2) Grades for Concentrated Orange Juice for Manufacturing.

The grades for the canned concentrate are revisions of the USDA grade standards which have been in effect since August 16, 1943. These proposals are being issued for the second time, having first been published in the Federal Register on February 21, 1952. Subsequently, an extension of time was granted to permit the citrus processing industry to submit further views. The basic features of the grades for the canned concentrate, which is intended for retail and institutional trade, are:

- The product is such that it requires processing by heat to assure preservation
- There are two styles—one without sweeteners added, and one with sweeteners added
- The concentrations are all "less than 1 plus 6", that is, they reconstitute by adding less than 6 parts of water to 1 of concentrate
- Brix-acid ratios provide a proper blend of sweetness to acidity in the reconstituted juice, when used as a beverage

The grades for concentrate for manufacturing constitute new USDA grade standards, and follow the request of the citrus processing industry for such grades. The principal features of the grades for concentrate intended for manufacturing purposes include the following:

- The product is such that it may or may not require refrigeration or processing by heat to assure preservation (the grades do not cover the product known as "frozen concentrated orange juice")
- There is one style—without sweeteners added
- The concentrations are all at "1 plus 3" or more, that is, they reconstitute by adding 3 parts or more of water to 1 of concentrate
- The relation of sweetness to acidity in the reconstituted juice may range from extremely tart to a relatively low-acid juice

Any exceptions to the proposals should be filed not later than 30 days after publication in the Federal Register, with F. L. Southerland, Processed Products Standardization and Inspection Division, Fruit and Vegetable Branch, Production and Marketing Administration, Washington 25, D.C.

FOIL SAID TO REPLACE ICING, VENTILATING IN CITRUS SHIPPING

Found: a technique which makes it possible for certain citrus fruits to be shipped without refrigeration or ventilation. This important development is announced by Reynolds Metals Company, which began research several years ago on shipping citrus fruits in aluminum foil-lined containers. The Reynolds research and testing program, conducted in cooperation with the Sunkist organization, has revealed the following possible advantages over present accepted citrus packing methods:

- Through the use of aluminum containers, weight, appearance, quality and flavor of the fruit are maintained during shipment and storage at ordinary temperatures for periods of 30 to 60 days or more.
- Ventilation of a foil-lined container is unnecessary under usual conditions.

Laboratory tests were confirmed by actual commercial carload shipments. It was found that Arizona and California grapefruit packed in aluminum foil-lined containers could be shipped and stored at relatively high temperatures with no ventilation without materially decreasing the weight, firmness, appearance, flavor or general quality of the fruit. The tests included periods many times longer than conventional storage limits. The additional cost of foil-lined containers was more than offset by savings effected in freight and refrigerated storage costs.

A spray mixture of three pounds of lead arsenate and 100 gallons of water will kill Spanish moss in pecan trees without injuring the trees. The moss will hang on the tree for some time after being killed, however. As lead arsenate is poisonous, cattle should be kept out of the orchard because they might eat some of the moss.

Clean Fruit



Assures Higher PROFITS

The quality of your fruit is often judged by the outside appearance, because external appearance has a great bearing on internal quality.

Whether your fruit is grown for fresh markets or cans, top quality fruit demands the best market price. To assure quality of the growing crop and health of the trees for future crops give your trees adequate care during summer months. NACO'S spray and dust program will do the job for you.

NACO offers Florida's most complete agricultural chemical service. Let Naco help you build your profits.

Try **NACO** and
Compare Results

NACO FERTILIZER
COMPANY

JACKSONVILLE, FLA.
FT. PIERCE, FLA.

Florida Citrus Crop Valued At \$115,300,000

Florida oranges and grapefruit had an on-tree value of approximately \$115,300,000 to the Florida citrus grower from November through June of the 1952-53 season, according to figures compiled by the Florida Citrus Commission.

Using on-tree prices reported by the U.S. Department of Agriculture, the state agency said that although total shipments of fresh Florida oranges for the eight-month period were 9472 cars less than in the same period last season, on-tree returns on fresh oranges alone were \$8,000,000 greater than in the 1951-52 period.

Florida fresh orange shipments, the Commissions report revealed, totaled 45,504 cars in the eight-month period this season, compared to 54,976 cars in the same period last season. A simple average of monthly on-tree prices listed by the USDA showed Florida growers to be receiving \$1.44 per box this season, compared to 89 cents per box last season, for fresh usage only.

Florida grapefruit shipments, the

reports continued, were about 2500 cars less from November through June this season than last, but returns to growers were \$4,400,000 greater. Shipments of fresh grapefruit totaled 32,546 cars this season through June at an on-tree average of \$1.12, while last season 35,042 cars were shipped at an average return to the grower of 79 cents per box on the tree.

The total on-tree value of Florida fresh oranges came to \$32,500,000 for the eight-month period, as compared to \$24,500,000 last season, while Florida fresh grapefruit had a total on-tree value of \$18,200,000 this season, against \$13,800,000 last season. The USDA on-tree values include all varieties of oranges and grapefruit from all areas.

On-tree returns for Florida oranges used by processors from November through June this season brought the grower an aggregate of \$58,000,000 compared with \$33,000,000 in the same period a year ago, the Commission figures showed, again using

USDA average no-tree prices as a basis for calculation. For Florida grapefruit, the on-tree returns for processing this season amounted to \$6,600,000 compared to \$2,050,000 last season.

California citrus growers, the Commission's report continued, moved 9568 more cars of fresh oranges from November through June this season than last, but received \$3,500,000 less at the on-tree level than they received in a similar period a year ago.

California shipped 42,199 cars of fresh oranges in the November-June period this season at an on-tree average of \$1.76 per box, while last season in the same period they moved 32,631 cars of oranges fresh, but received a \$2.46 average on-tree. Total on-tree value of the California fresh orange crop for the eight months this season was \$34,000,000, compared to \$37,500,000 last season.

Bad spark plugs are one of the chief causes of excess fuel consumption in a tractor or automobile engine.

As the weather gets warmer the control of external parasites of poultry becomes more important.

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Strong, healthy citrus trees make full, juicy fruit that's always in demand. And you'll grow fine trees, higher quality fruit when you feed energized Vertagreen. Energized Vertagreen is prepared especially for citrus growers in this area. It's the better-balanced plant food with extra growing power—extra nourishment that feeds completely, makes fine, quality fruit and puts extra profits in your grove. See your Armour agent today and place your order for energized Vertagreen.

ARMOUR FERTILIZER WORKS
Jacksonville, Florida

Mutual To Seek Home Juicing Unit

In an effort to stimulate the fresh citrus market, Florida Citrus Mutual is considering making a cash award to the inventor of a practical, home juicing unit.

Mutual believes an economical home juicer which would take a whole orange or grapefruit and slice it, squeezing the juice free of peel oil would give the fresh fruit segment of the industry a much needed boost.

Mutual General Manager Bob Rutledge said there are some excellent juicers on the market at the present time. He indicated, however, that the housewife is still bogged down by "the messiness" which accompanies slicing, squeezing and disposing of orange hulls.

"We haven't determined the amount of the award," he said. "But it might stimulate some inventor to work harder on a much needed piece of equipment which would prove a boon to the housewife and the fresh fruit industry alike."

Rutledge said the industry still needs an energetic fresh fruit market which can absorb large quantities of fruit and maintain the keen competition which is necessary for the grower to get the true value of his fruit.

"This condition is necessary despite the unprecedented expansion of processed citrus which has been a lifesaver to the grower," he said.

Mutual pointed out that the fresh orange market during the season now coming to a close took almost 5,000,000 boxes less oranges than in 1951-52 and grapefruit also was down 1,500,000 boxes.

Rutledge pointed out that home juicers for fresh citrus are behind the times placing them in the "horse and buggy" category. "So far as we can determine, there isn't one on the market which will handle the whole fruit and produce juice that is oil-free and palatable," he added.

With an emphasis on speed and more leisure, Rutledge pointed out that the modern housewife is looking for shortcuts and labor-saving devices.

He indicated that the development of the right juicer would benefit Florida much more than California since Florida oranges are bought for juicing.

He explained that a tremendous outlet for increased citrus consumption exists through perfection of such

a juicer with each of the 40,000,000 families in the nation a prime prospect.

"This is just another effort on the part of Mutual to create more demand for the Florida grower," he continued. "The effort to have a juicer developed will supplement the activities of the organization in seeking to get more dispensers into high-traffic spots not now properly

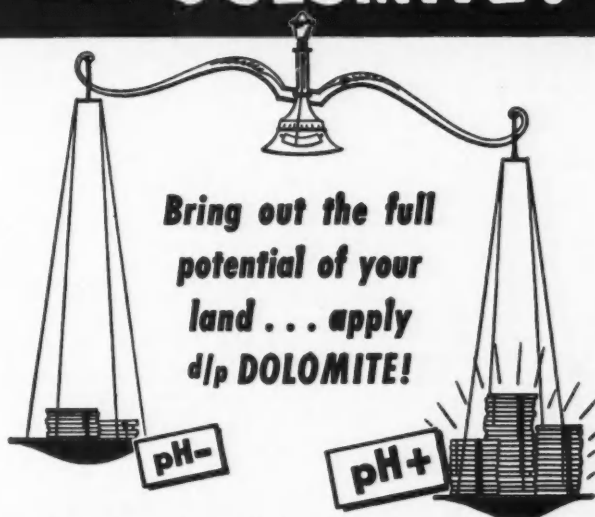
served."

"With Florida crops getting bigger each year," he added, "we must develop every possible outlet to stay that necessary one jump ahead of supply so the grower has a market for all his fruit at a reasonable price."

The electric mower has proven very satisfactory for the medium-size lawn.

Beef, cabbage and canned tomato juice are headliners on the current plentiful foods list.

For Land's Sake use DOLOMITE!



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Reports Of Our Field Men . . .

SOUTH POLK, HIGHLANDS, HARDEE & DESOTO COUNTIES

C. R. Wingfield

High temperatures have prevailed for the month of July, however, thundershowers have brought some relief at intervals. These showers have been sufficient to keep the groves in good moisture conditions. The trees are holding their color and the fruit has sized well in most cases.

Scale and rust mite have been very active during the month and most growers are applying controls, either oil for scale or parathion and sulphur for scale and rust mite.

During this period and until fall is a good time to check our soils for acid reactions and apply Dolomite where needed. Also time for your young tree fertilizer application so that the last feeding will come about Sept. 1st.

Vegetable growers are breaking their soil and making ready for their fall plantings. Applying their soil conditioner well in advance of the planting. From all indications there will be a normal planting.

WEST CENTRAL FLORIDA

J. E. Mickler

It would seem that Jupiter P. has been working overtime trying to make up for the lack of moisture in the past. It can be safely stated that enough moisture is in the ground at this time in this section. At this writing only a few fruit has shown any tendency to split.

Rust mite has been the major offender this past month, and by now most groves are past the danger point by prompt treatments. Crops in this section are sizing very nicely and should finish off to see a very good price. Every indication is that the growers will enjoy a good year to come.

Despite lowered cattle prices, pasture maintenance is still being practiced among many cattlemen, and to them will go higher prices for the cattle fed off on well fertilized grasses.

POLK AND HIGHLANDS COUNTIES

J. T. Griffiths and J. K. Enzor, Jr.

During late June and early July rainfall was very spotty throughout the Ridge section. In fact, by July 15, there were some groves that were actually being irrigated. The driest areas which we observed were in the Lake Alfred-Lucerne Park areas along with areas east and north of Lake Wales. Young trees have suffered in some groves and lack of rainfall has been a real problem in some old groves.

Rust mites have been, and are continuing to be, a severe problem this summer. Neither oil nor parathion-sulfur have been very successful in controlling mites. It has been necessary to return after spraying with both within a month with a straight sulfur application. Best results have been obtained where sulfur was applied in late May or June and followed in a month with a scalcide spray. This is going to make an extra spray in some groves this year.

In some groves where arsenic has been used the grapefruit trees has not grown satisfactorily this summer and typical arsenic toxicity symptoms are beginning to show. It is recommended that some quickly available form of nitrogen be applied in these groves by mid-August.

NORTH HILLSBOROUGH AND PINELLAS COUNTIES

J. A. Hoffman

Summer application of fertilizers have been completed in this section and with the rainy season setting in, groves are showing a normal growth and fruit is sizing nicely. Most groves show a fair crop for the coming season.

Due to the heavy infestation of rust mite sulphur sprays have been applied ahead of the summer application of oil.

Pasture men are busy applying their summer application of fertilizers and soil builders. Many acres have been cleared and planted in Pangola grass or Pensacola Bahia, which are most

common in this section. There has also been many acres of Alyce Clover planted for hay.

A large acreage of sweet potatoes have been planted, which proved to be a most profitable crop to growers last year.

Whatever you plant with proper care and an application of the various analysis of Lyons fertilizer suitable to the soil condition will give you most profitable yields.

NORTH CENTRAL FLORIDA V. E. Bourland

We have been having some nice rains lately, but we still have hot weather while it is not raining. Groves are all looking good and most of them have fine cover crops. Although the growers are having to check their groves regularly for the different insects they all seem to be working.

Fruit is looking good and sizing up well in most groves. The June blooms are not far enough along to tell much about how much is going to stick. Lots of growers are pruning their groves now, and having young trees hoed.

Pastures are all coming back in good shape since we began to have rain, and cattle are showing it. Most all are getting in fine shape.

SOUTHWEST FLORIDA Eaves Allison

Optimism is again evident among the vegetable and flower growers, as it is at the beginning of every new season. New land is being prepared and limed and preparations for early plantings of truck crops are moving ahead. Cover crops are well along in some cases, with some stands of sesbania just coming up on the late blocks.

Citrus is in good shape in this area with heavy flushes of summer growth and in some groves much June bloom is showing. Rust mite has been active as usual. Rains have been barely sufficient. Vacation time is about half over now, July 16th, with some a' comin' and some a' goin'. All in all, everything ain't too bad!

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Uncle Bill Says:

Did you ever see a feller who was completely satisfied with life? We never did, 'ceptin' one old guy we used to know who spent all his time sittin' on the bank of a creek fishin' from mornin' 'till night . . . he told us he was jist plain happy cause someone had left him enough money for clothes and vitals, and since fishin' was his most favored form of relaxation he just spent all his time at it . . . he opined that all this rush and scramble to git rich jist didn't phase him and he said that all this commotion about atom bombs and wars and stuff didn't bother him none 'cause if he got blowed to smithereens he figgered nobody much would mourn his passin' and he'd be satisfied to leave his fishin' spot permanently cause he'd already seen and done most everything.

Of course this old devil was satisfied fer jist two reasons . . . he was plumb selfish and was too durned lazy to do any good fer himself 'er any other folks . . . so we reckon it's a mighty good thing that most of us ain't aitogether satisfied with everything.

If we was all like this old fisherman it's a sure bet that the sort of citrus and vegetable crops we'd be raisin' in this good old state of ours wouldn't be nearly as large or as good as they are with us tending to 'em like we do . . . seein' that they are properly fertilized, and that the insect pests is controlled and in time of need seein' that we do enough irrigatin' to keep our crops growin' until the rains come.

'Nother thing most of us has got to do to keep our own production up with that of our neighbors is to keep informed as to every late development in what these educated folks call "cultural practices" . . . fer if we don't our neighbors is goin' to leave us way behind . . . and that would make most of us mighty dissatisfied.

Personally, we don't like to work or study too hard . . . but we've sort of got around a lot of that kind of drudgery by havin' Lyons Field Service Men keep us advised as to what we should do to keep our fruit and crops in tip top shape. Don't cost nothin' extra and saves a lot of work.

California Growers Seek Information

The ancient rivalry between Florida and California citrus interests, declares Harold Colee, "has given way to a spirit of enlightened self-interest and cooperation. Both have a common objective of promoting the American citrus industry, and have united in national merchandising efforts to their mutual benefit." Colee is Executive Vice president of the Florida State Chamber of Commerce.

"Now California wants to know how Florida so successfully carries on its annual 'Eat More Citrus' campaign," Colee added. "The National Orange Show with headquarters in San Bernardino, has asked how we do it." In reply Colee wrote:

"Florida, where 'everybody is in the citrus business,' faces a perennial problem in selling the harvest of its constantly expanding grove acreage. Until 1949, sales efforts were concentrated in the northern centers of population with little thought given to the growing market at home. It seems, Floridians were shipping—not eating—citrus products. The Florida State Chamber of Commerce was asked to do something about it.

"It was decided that citrus promotion, like charity, should begin at home. An educational campaign was launched by the State Chamber with the cooperation of 25 statewide organizations, the hotels, restaurants, schools and retail stores, to push Florida citrus consumption within the state. The

idea caught on, and interest mounted year after year.

"Florida's permanent population exceeding three million offered a considerable consumer market in itself. Millions of tourists augmented the potential. The State Chamber told 'The Citrus Story' through every channel available—the press, radio, TV, and by word of mouth thereby transforming its citizens into a citrus sales force.

"Originally limited to the folks at home, news of the campaign spread to Canada, England—and to California and other states. Amer-

ican newspapers reported the campaign far and wide, and even British fruit and vegetable journals carried feature stories on Florida's citrus drive.

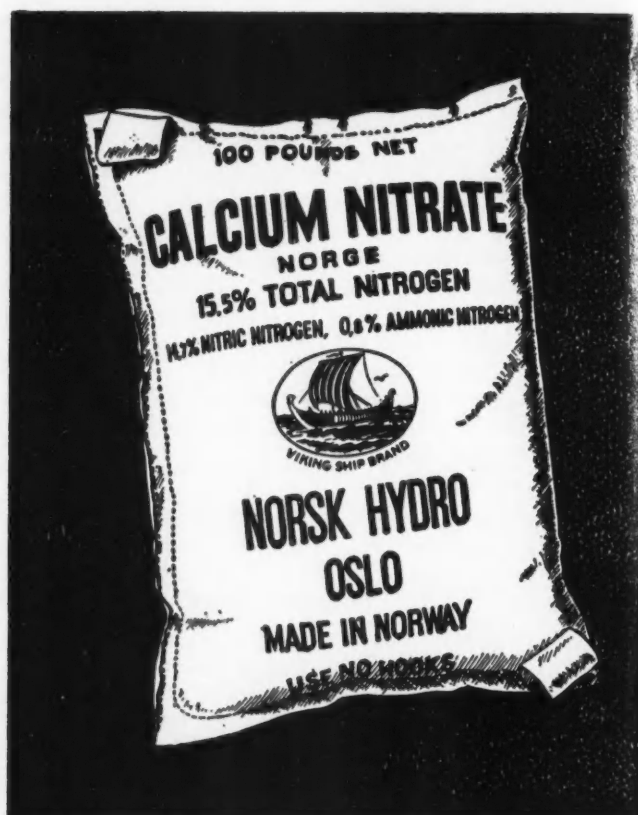
"Working in close cooperation with the Florida Citrus Commission, Florida Citrus Mutual, Florida Citrus Exchange, state and local officials, the State Chamber Citrus Promotion Committee, headed by J. E. Davis, grocery chain executive, has enlisted All-Florida in its forceful annual appeal to 'Eat More Florida Citrus'."

Classified Ads

HAIRY INDIGO SEED — Common Hairy Indigo, purity 99.00%, germination 91.60%, \$30.00 per cwt. Early Hairy Indigo, purity 99.25%, germination 83.00%, \$32.50 per cwt. Blanket Hairy Indigo, purity 95.87%, germination 88.00%, \$40.00 per cwt. Florida Beggarweed Seed, purity 96.12%, germination 61.00%, 80c lb. Free delivery on 500 lbs. or more.
LEWIS & VICKERS
P. O. Box 1117 — Phone 3828
Haines City, Florida

SUPERIOR CITRUS TREES—Now available on Rough Lemon, Sour Orange, Sweet Orange, and Cleo Rootstocks. Prices \$1.10 up, depending on the size and number ordered. Also Seedlings for lining out of all varieties. Write for "Tips to Growers".

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TAMPA, FLORIDA

Retailers Feature Citrus In Local Advertising

Retail food stores advertising in the 151 daily newspapers on the Florida Citrus Commission's advertising schedule spent \$1.11 of their own money on Florida citrus ads for every \$1 spent by the Commission, the state agency reports.

In its final report for the 1952-53 season, the Commission showed that the 151 newspapers in 135 cities in 26 states ran retailer advertising on Florida citrus products valued at \$643,886. During the same period, the Citrus Commission spent \$581,439 for newspaper advertising.

The figures on the advertising placed by retailers, includes only the lineage in those newspapers which were used by the Commission, and does not count the citrus ads in the approximately 1600 other daily newspapers in the country, the state agency pointed out.

Broken down, the report showed that 54 newspapers in 41 cities in 22 states which comprised the Commis-

sion's "A" schedule—major markets where the greatest amount of citrus advertising was carried—ran \$417,692 in retailer-paid citrus ads, compared to the Commission's \$354,596 expenditure.

The 79 newspapers in 77 cities on the "B" schedule received \$143,700 for advertising on Florida citrus products placed by the Commission, but retail food stores in those markets spent \$164,857 to advertise citrus in their own ads. Sixteen newspapers in 15 cities on the "C" schedule accounted for \$28,560 of the Commission's newspaper advertising budget, but received \$55,435 from retailers for Florida citrus ads.

All newspapers on the Commission's advertising schedule furnish the state agency tearsheets of all grocery and produce ads in which Florida citrus products are mentioned, enabling the Commission to tabulate the tie-in lineage gained by its investment. The newspapers are also graded on the amount of merchandising support they offer the Commission's advertising program, and each season's contracts are placed on the basis of that support.

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Spuds Johnson says if you cultivate safety you can harvest happiness.

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... more and more the production of fine crops has become an exact science, and the increasing competition among our own growers and with growers elsewhere makes it essential that not only volume crops, but crops wherein flavor, appearance and the fullest measure of food value are pronounced, be produced by our growers.

Helping to bring about just such products is our responsibility to Florida growers ... let us serve you.

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